Are Current Data Management Practices Adequate For HIPPA Compliance? A National Survey Of Medical Data Collection

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Introduction

Given the imposition of increasingly detailed standards related to data collection and information management in healthcare organizations, can existing data acquisition practices be relied upon to meet regulatory requirements?

At the administrative level, the pressure to implement some measure of data quality assessment has never been greater. Designed in part to facilitate patient protections, The Health Insurance Portability and Accountability Act of 1996 (HIPAA), mandates certain efficiencies, or administrative simplification requirements. As part of the standard formats to streamline the processing of health care claims, for example, HIPAA seeks to reduce the volume of paperwork, save the U.S. health care system significant processing costs, and provide better service for providers, insurers and patients (P..L. 104-191, 1996).

The new standards establish uniform data content and formats for submitting electronic claims and other administrative health transactions. All health care providers will be able to use the electronic format to bill for their services, and all health plans will be required to accept these standard electronic claims, referral authorizations and other transactions (Goedert, 2001).

Such measures are focused on using new information technologies to benefit both patients and providers, and are designed to improve quality and efficiency while also cutting costs and protecting privacy. These standards are important steps toward a faster, simpler, less costly and more efficient health care, though they require standard electronic data collection to replace today's costly and complex paper forms. By promoting the greater use of electronic transactions and the elimination of inefficient paper forms, the administrative simplification regulations are expected to provide a net savings to the health care industry of approximately $30 billion over 10 years (Harrington, 2001).

Ultimately, all HIPAA requirements, to be effective, will need some level of data collection consistency in order to assess subsequent compliance with data requirements specific to information management. Such regulations establish uniform, national identification numbers for employers and health care providers to speed claims processing and lower costs. In addition, HIPAA lays out steps to make electronic health data secure, and protect the privacy of patients' medical and health insurance records (Lanser, 2001).

Prior to HIPAA, different insurers required different electronic and paper forms from health care providers when they file claims. Under the new regulation, all electronic claims transactions must follow the single standardized format. Providers will still be allowed to use paper forms, but the simplified process is expected to encourage more electronic filing. Under the current regulations, health plans & providers that choose to transmit their transactions in electronic form must comply with these rules by October 2002, except that small health plans have an additional year in which to comply (P.L. 104-191, 1996). Small health plans in this case include those with fewer than 50 participants, or a small business, defined as those concerns with annual receipts under $5 million (13 CFR 121.105).

Other provisions of HIPAA suggest more rigorous data collection management practices. Health plans, for example, will be able to pay providers, authorize services, certify referrals, and coordinate benefits using a standard electronic format for each transaction. HIPAA further outlines a process for maintaining the format and content of the standard transactions system, with the ultimate goal being that information exchange will be more efficient and accurate, and providers will be able to spend less time on paperwork, and more time on the health care of their patients (Friedrich, 2001; Sarudi, 2001).

Overall, the call is for significantly greater standardization of information services, with greater potential penalties for poor data quality, as information is collected from health professionals as well as consumers. Such measures should, in theory, also increase awareness of the role of data consistency in health and disease management. However, there are a number of issues to be confronted in considering how service providers can meet this demand, in an environment that remains a derivative of a paper-based documentation system that increasingly relies on automated information systems and associated system-based data quality management. The emergence of evidence-based, or data driven decision-making, employs the use of current best evidence in making decisions about the care of individual patients. The practice of evidence-based medicine, likewise, relies on integrating individual clinical experience with the best available external clinical research evidence (Davidoff, 1995).

High quality external treatment data, which applies clinical research in routine practice, is integrated into patient-centered clinical research, incorporating such concepts as accuracy and precision of diagnostic tests (including the clinical examination), the power of outcomes-based diagnostic indicators, and the efficacy and safety of therapeutic, rehabilitative, and preventive regimens (Davidoff, 1995).

A related key factor that may not have been accounted for by HIPAA supporters and proponents of evidence-based medicine is the availability of competent managers to oversee planning, implementation, and maintenance of data systems to support a sustainable data-driven healthcare environment. Central to all of the above issues is uniform and consistent data collection. If providers and managers are to make truly informed decisions based on information, or are to contribute to policy-making formation, they must address the impact data consistency has on evidence-based clinical practice and management (Weber, 2001)

Ultimately, all information management requirements, in order to be effective under HIPAA, will need some level of data collection consistency if managers are to assess subsequent compliance with data requirements, related to their respective information systems. Within such an environment, this study sought to assess, on a national level, variation in the adoption of a formal data acquisition strategy within healthcare organizations, highlighting potential refinements to health data management in a HIPAA-compliant environment.

Research Question Presented

We seek to understand, on a national level, if healthcare organizations uniformly adopt consistent data collection policies as part of their overall organizational structure? If not, how does adoption vary? Within such an environment, this study aims to outline issues that confront the working health information manager, along with some findings that could serve as initial quality assessment benchmarks, related to adoption of data consistency assessment as a management function. When this dichotomy is viewed against the background of the existing information framework, we may appreciate how, in promoting the adoption of uniform data collection practices in clinical practice, the evaluation of data management has the potential to change the assessment of healthcare quality at local, regional and community levels.

--- See Fig. 1 at conclusion of article ---

Data and Methodology

Data from a nationwide survey of healthcare information managers, the AHA Annual Survey, the U.S. census, Interstudy publications, state and regional health service departments, and *The Market Statistics Report* were used to examine the organizational and environmental characteristics of data quality in a variety of healthcare settings. A comparison of selected data quality characteristics was made across practice settings, geographic areas, and selected healthcare demographic characteristics.

The survey data included measures of the adoption of a standard data acquisition strategy, and the existence of organizational characteristics relevant to data quality assessment practices.

Design and Methodology

The survey, completed in May of 1999, was a response to the need of the healthcare industry for more timely and frequent practice information in the field of health information management No comprehensive study of this kind has been available in the past.

The goal of this undertaking was to establish a source of practical, comparative information that can be used in both strategic planning and day-to-day practice. This project was designed to allow ready access to ideas and innovations that other professionals have used in solving management and technology problems common to many organizations.

This study was designed to provide periodic information on information management as it relates to the process of organization-wide collection of information.

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Sample Design

The initial survey was initially fielded in June 1998, with follow-up assessments accomplished through May 1999. It was designed to provide representative information on the population of 32,911 accredited U.S. health information managers. The group surveyed included respondents from a variety of practice settings, job titles and management levels. The survey obtained data from 16,591 health information managers, for a 50.4 percent gross response rate.

Samples for surveys were selected from a database of certified health information managers provided by the Foundation for Record Education (FORE), and contained current and historical information on RRA/ART credentialed information professionals in the United States. The data included on the population surveyed were obtained primarily from membership renewal forms and from an annual member profile mailed to all active members. Preferred mailing address data were obtained from the member population from those members with changes in address or professional status. These changes may be signaled by input from periodic mailings or by other correspondence.

Questions for the main questionnaire were developed from a review of past surveys and focus group results. Questions in the survey were designed so that managers from a variety of practice settings and work roles were asked questions that were generally relevant to the profession overall.

Work settings captured in this study included the following:

Hospitals and medical centers

Group practices

Ambulatory care clinics

Managed care offices

Long-term care and rehabilitation facilities

Colleges and universities

Consulting firms

Government agencies

Software product companies

Pharmaceutical companies

Self-employed HIM professionals

Other work settings

Topics were formulated and pre-tested by convened groups of practicing information managers to represent a broad range of activity areas. Questions that had not been used previously in any known surveys of health information professionals were pre-tested prior to the survey fielding to evaluate the wording and ordering of questions and to determine the ability of respondents to provide the desired information.

Field Procedures

Prior to the survey mailing, announcements were made through professional publications and meetings to inform members of the upcoming survey. A preprinted confidential questionnaire was mailed to all credentialed health information managers who had valid mailing addresses. An instruction letter accompanied the form and explained the purpose of the survey and instructions for completion. At the six-week point following the last wave of the initial mailing, a second mailing was sent to those who had not responded.

Follow-up on specific issues identified after the second mailing was accomplished as a series of more focused studies.

The questionnaires were processed by an independent testing and research firm, National Computer Sytems of Minneapolis, MN, which processed forms weekly over the length of the study. Region-specific response rates were tracked to ensure that the mailings were received in a timely manner.

Strict adherence to confidentiality standards was maintained in this study. Data were entered via a computerized scanning system and released only in aggregate form, without individual respondents identified within the reported results.

In addition, a number of data quality control measures were employed to provide the cleanest possible data. A detailed review was made of all sample response dispositions, both pending and final, on a weekly basis. From this evaluation, the time schedule was reviewed and necessary recommendations were made to the contractor to enable the survey to be completed during the allotted field period.

As part of the post-survey program review, the design and methodology were examined to identify areas needing improvement. After data entry was complete, an evaluation was made of the impact of survey and item non-response rates and various potential methods for adjusting results to correct for non-response.

In the process of collecting demographic and practice setting information on health information managers, they were asked the following:

Does your facility have a regular process to identify and prioritize data acquisition?
a. yes
b. no

Responses were categorized and cross-tabulated with key practice setting and geographic variables. Resulting means were tested using a two-sample t-test, assuming unequal variance, with alpha at .05 (see Tables 1-5, below)

Results
The use of a regular process to identify and prioritize data acquisition is still seen in a minority of healthcare organizations, despite an increasing need to do so. Overall, 45.6 % of respondents claimed they had adopted a regular process to identify and prioritize data acquisition.

Table 1- OVERALL ADOPTION OF A REGULAR PROCESS TO IDENTIFY AND PRIORITIZE DATA ACQUISITION

	TOTAL (A)
BASE: THOSE RESPONDING	100%
YES	45.6
NO	54.4

Variation was prevalent across practice settings regarding adoption of formal data acquisition practices. Respondents located in hospital practice settings (49%) were significantly more likely (at $p<.05$) to have a regular process to identify and prioritize data acquisition than clinic (30%) and "other" (44%) practice setting facilities.

Table 2- PRACTICE SETTING VARIATION IN ADOPTION OF A REGULAR PROCESS TO IDENTIFY AND PRIORITIZE DATA ACQUISITION

	HOSPITAL (B)	CLINIC (C)	OTHER (D)
BASE: THOSE RESPONDING	100%	100%	100%
YES	49.3 CD	29.8	43.8 C
NO	50.7	70.2 BD	56.2 B

* letters within cells indicate two-tailed t-test significance between cell means, at (p<.05)

Significant variation also existed across geographic boundaries. Facilities that have a regular process to identify and prioritize data acquisition in the South Atlantic region (49%) are significantly higher adopters of this practice, compared to respondents in the East North Central (42%), West North Central (35%), West South Central (42%) and Mountain (38%) regions.

Table 3- MANAGER/NON-MANAGER VARIATION IN ADOPTION OF A REGULAR PROCESS TO IDENTIFY AND PRIORITIZE DATA ACQUISITION

	MANAGER (E)	OTHER (F)
BASE: THOSE RESPONDING	100%	100%
YES	42.5	48.2 E
NO	57.5 F	51.8

Sixty-five percent of West North Central region respondents do **not** have a regular process to identify and prioritize data acquisition, a significantly higher adoption rate from all other regions except the New England (56%) and Mountain (62%) regions.

Table 4- REGIONAL VARIATION IN ADOPTION OF A REGULAR PROCESS TO IDENTIFY AND PRIORITIZE DATA ACQUISITION

	NEW ENGLAND (G)	MID. ATLANTIC (H)	E. NO. CENT. (I)	W. NO. CENT. (J)	SO. ATLANTIC (K)	E. SO. CENT. (L)	W. SO. CENT. (M)	MOUNTAIN (N)	PACIFIC (O)
BASE: THOSE RESPONDING	100%	100%	100%	100%	100%	100%	100%	100%	100%
YES	44.0	45.4 J	42.3 J	35.3	48.8 IJMN	48.0 JN	42.4 J	38.0	45.7 JN
NO	56.0	54.6	57.7 K	64.7 HIKLM O	51.2	52.0	57.6 K	62.0 KLO	54.3

Recent merger activity was associated with variation in adoption of formal data acquisition. Organizations that have gone through a merger in the last 3 years are significantly more likely to have a regular process to identify and prioritize data acquisition (51%), compared to organizations that have not merged (43%).

Table 5 - MERGER STATUS VARIATION IN ADOPTION OF A REGULAR PROCESS TO IDENTIFY AND PRIORITIZE DATA ACQUISITION

	MERGER (P)	NO MERGER (Q)
BASE: THOSE RESPONDING	100%	100%
YES	50.7 Q	43.2
NO	49.3	56.8 P

Discussion

As a broad measure of consistency in data management, this study examined adoption of formal data collection in organizational information systems, a basic data management indicator. Overall, a slight minority of respondents (45.6%) reported the implementation of a formalized data acquisition process.

Where is more standardized data collection practice likely to be found? As seen here, regular data acquisition varies to some extent across organizational types; outpatient clinics tend to have a somewhat lower adoption of formal data acquisition compared to hospitals and other settings, such as long term care facilities.

Respondent's organizational role was to some degree related to perceptions of standardized data collection; managers tended to see their data collection practices as less standardized, compared to non-managers. Perhaps managers tend to be overly optimistic, or line-level technicians actually see more piecemeal implementation on a day-to-day basis than do managers. The organizational role of the beholder, nevertheless, appears to have some bearing on how often formalized data collection practices are reported.

Noteworthy here, as well, is the degree of data collection variation reported across regional boundaries. Respondents from The South Atlantic region reported the highest degree of formal data collection, followed by the East South Central Region; those in the West North Central reported the worst. Assuming that such variation is a hallmark of error (Juran, 1998), when examining data from the former group one might expect, on average, about 51% of the information within the organization to contain significant variation within a given data element. In the latter group, about 65% of the data might contain, or be vulnerable to, like error. In some cases, this degree of variation may be inconsequential. In others, it may exert a profound effect. Nevertheless, findings here suggest that when examining medical data consistency across regions, area variation in collection practices must be assessed and accounted for.

Of equal interest here is the proximity of the reported variation in collection practices. While we would expect, perhaps, some degree of randomness across the U.S., the most consistent data collection practices here were found in the same general locale (i.e. Southeastern U.S.). The least consistent practices were found in the West North Central area. This may reflect sharp market-based differences, or differences in population density between regions. Nevertheless, it shows that data collection practices may be occurring across broader areas, which are often influenced by large provider corporations or managed care networks, increasingly spanning broader geographic areas.

The most inconsistent practices were found in the West North Central area. Again, the level of variation here compared to the South Atlantic region suggests the need to at least examine such variation in detail, given the corresponding need for consistency in collection practices. The assessment of error trends and variation across regions with overlapping markets is often required when comparative analysis is called for across regions (Shingles, 2001). While the results here reflect managers' perceived practices, it nevertheless suggests that where you are makes some difference as to how consistent your data is.

A final interesting feature of the results here relate to the variation found between organizations having recently merged. Those who have recently undergone a merger tended to have more formalized data collection practices than those who had not merged. It may be that better or more consistent information resources make an organization more attractive as a merger partner, or merger activities motivate managers to improve their data collection process. Nevertheless, how recently an organization has merged tends to be associated with how consistent data collection is perceived to be.

Within the context of the challenges presented above, this study sought to determine whether there is widespread variation in medical data acquisition, and whether there exists significant regional variation in data collection practices. While such practices are examined between regions, they can just as easily occur between specific states or even within states. The existence of such variation, in an era of both mandated government data management standards and evidence-based clinical protocols, would at least suggest inequity in information quality, quality practices, and ultimately, perceived clinical service quality, within an evidence-based healthcare system (Callas, 2001).

Government information management mandates, however, dating back to 1996, appear to have been only partially adopted. The findings here demonstrate also that there exists significant variation in the nature and level of data quality assessment, suggesting a need for more management attention to consistent data collection, as mandated under HIPAA.

One important benefit of defining services and standards at a national level is that it provides a basis for regional and local direction of services, showing that, while there are wide variations in data collection and information management practices, each region may have its individual needs, highlighting the potential for inter-regional collaboration. Thus, perceived variation in the level of service provision may be a cause for concern, since demand placed on the service as a result of evidence-based medicine is likely to exacerbate this inequity. (Weber, 2001; Briggs, 2001) .

Other key issues which need to be addressed in developing more consistent data management services include assessment of the local needs of the served population, including specialty groups, and the availability of resources for education of health professionals, particularly those remote from regional medical centers. Also, equity of access to information, for both public and professionals, equity of access to independent expert data management advice for policy formation, and the potential for disparate data quality needs between evidence-based medicine and existing services in competing for resources, are required. In developing such services at a regional level, the ability of existing data structures and practices to meet new challenges and opportunities must first be examined (Lloyd, 2001; Hatton, 2001).

Awareness of the data needs of disparate populations is also required in an emerging HIPAA environment. Area analysis of incidence and prevalence of evidence-based outcomes data would not necessarily reveal differences in activity at a regional level. If services are to be developed that are appropriate for all user groups, policy-makers and service providers have to be aware of the unique needs of local markets. One potential block to awareness on the part of policy-makers is the dearth of information on the data collection practices for the served population. A possible solution to this would be the creation of a new focus on data management, which might then facilitate the collection of small area statistics. A second potential barrier is the failure to engage stakeholders in planning appropriate services. The establishment of data quality studies, relevant to both provider representatives and affected organizations, is thus called for as a means to advise policy planners on local needs.

In a HIPAA-compliant environment, more consistent data management activities will also need to be performed on a periodic basis. Within the context of quality management, verification checks of the data format, type, and conformity of values to range constraints would help ensure consistency with other related data. Within this context, validation checks of data consistency in comparison to the real world objects are needed as benchmarks for effective health information management.
Archival management is likewise important to prevent inconsistent data from misuse, and record the success or failures of attempts to use the data for various applications while the data was active. Improving the motivation of the managers to adopt consistent data collection practices may require fundamental changes in policies for their work performance evaluations, and in the practices for funding the operations, maintenance and enhancement of the source transaction systems. Against this expanded background, each region or market should assess its data collection needs and identify those needs in national data requirements debates.

Today, there still exists a strong influence of local information management culture and structure, as well as legal and historic precedents that have to be taken into account in identifying optimum service levels. With already wide variation in the level and availability of services between states, the very different degrees of consistency of information systems and strategies should be identified as a key factor to be considered in developing information policies.

Conclusion

The data-related shortcomings outlined here do not lessen the need or urgency for central data collection strategy and standards. The need for a standard framework of indicators used to evaluate the quality of care across varied markets is apparent. Regional variation in the adoption of system-based patient records and shortages of trained health information professionals suggests an urgent need for new training programs within the healthcare professions. The need for more focused areas of information management expertise in the field of data quality remains one of the greatest challenges faced by the healthcare industry today. Involving health care professionals already familiar with current health information management would be a likely first step, serving to develop increased knowledge of system-based data processes and problems among healthcare professionals.

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Fig.1

A Model of Data-Driven Healthcare Quality